

Proposed Item for Biobased Designation

The following biobased product information has been collected to support item designation by USDA for the BioPreferred Program. This summary reflects data available as of September 15, 2008.

Title: Mulch and Compost Materials

Description: Products designed to provide a protective covering placed over the soil, primarily to keep down weeds and to improve the appearance of landscaping. Compost is the aerobically decomposed remnants of organic materials used in gardening and agriculture as a soil amendment, and commercially by the landscaping and container nursery industries.

Companies Supplying Item: 67 companies supplying Mulch and Composts have been identified through internet searches, manufacturer's directories, trade associations, and company submissions.

Industry Associations Investigated: The following industry associations have been investigated for member companies supplying Mulch and Composts:

- United Soybean Board
- National Corn Growers Association
- The Association for Organics Recycling
- National Gardening Association
- Association of Compost Producers
- Ohio Compost Association, Inc.
- US Composting Council

Commercially Available Products Identified: Of the companies identified, 232 Mulch and Composts are commercially available on the market.

Product Information Collected: Specific product information including company contact, intended use, biobased content, and performance characteristics have been collected on 53 Mulch and Composts.

Industry Performance Standards: Product information submitted by biobased manufacturers and suppliers indicate that have typically been tested to the following industry standards:

- ASTM International C16 Standard Test Method for Load Testing Refractory Shapes at High Temperatures
- ASTM International D18 Standard Test Method for Sieve Analysis of Fine and Coarse Aggregates
- ASTM International D790 Standard Test Methods for Flexural Properties of Unreinforced and Reinforced Plastics and Electrical Insulating Materials

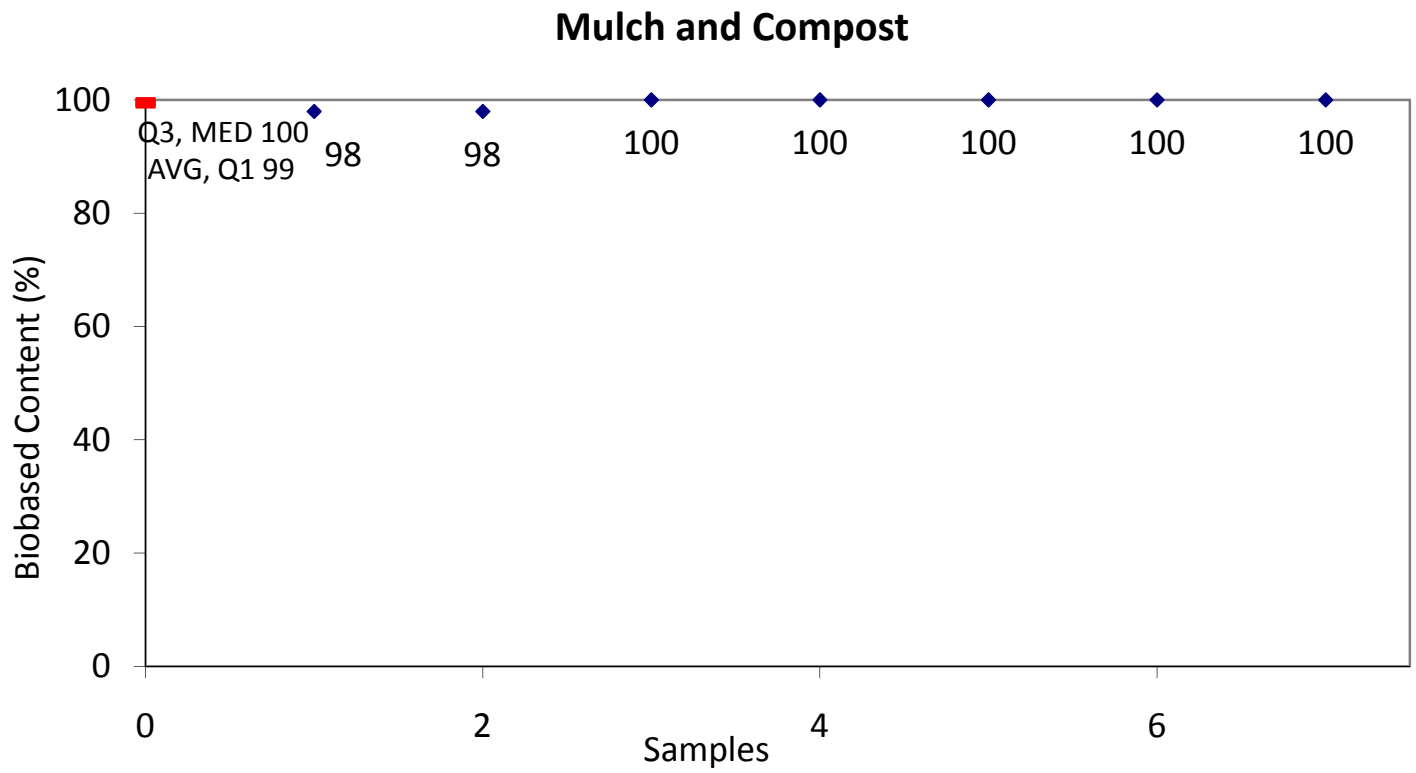
Samples Tested for Biobased Content: 7 samples of Mulch and Composts have been submitted to independent laboratories for biobased content testing as specified by ASTM standard D6866-04.

Biobased Content Data: Results from biobased content testing of Mulch and Composts indicate a range of content percentages from 98% minimum to 100% maximum biobased content as defined by ASTM D 6866-04. A detailed distribution of biobased content levels is included as Appendix A.

Products Submitted for BEES Analysis: Life-cycle cost and environmental effect data for 1 Mulch and Compost product has been submitted to NIST for BEES analysis.

BEES Analysis: The life-cycle cost of the submitted Mulch and Compost is \$9,213.75 per usage unit. The environmental score is 0.4064. A detailed summary of the BEES results is included as Appendix B.

Appendix A - Biobased Content Data

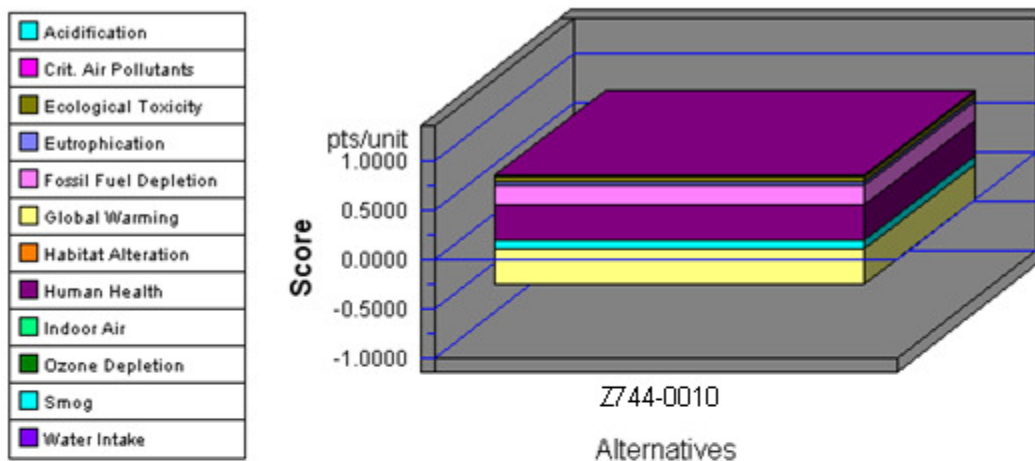


	Company	Product	C14	BEES
1	X2J2	X2J2-0004	98	
2	TR8G	TR8G-0001	98	
3	RX8H	RX8H-0001	100	
4	Z744	Z744-0010	100	Yes
5	U1V8	U1V8-0001	100	
6	P1RE	P1RE-0004	100	
7	P1RE	P1RE-0002	100	

Appendix B - BEES Analysis Results

Functional Unit: 1 acre of coverage

Environmental Performance

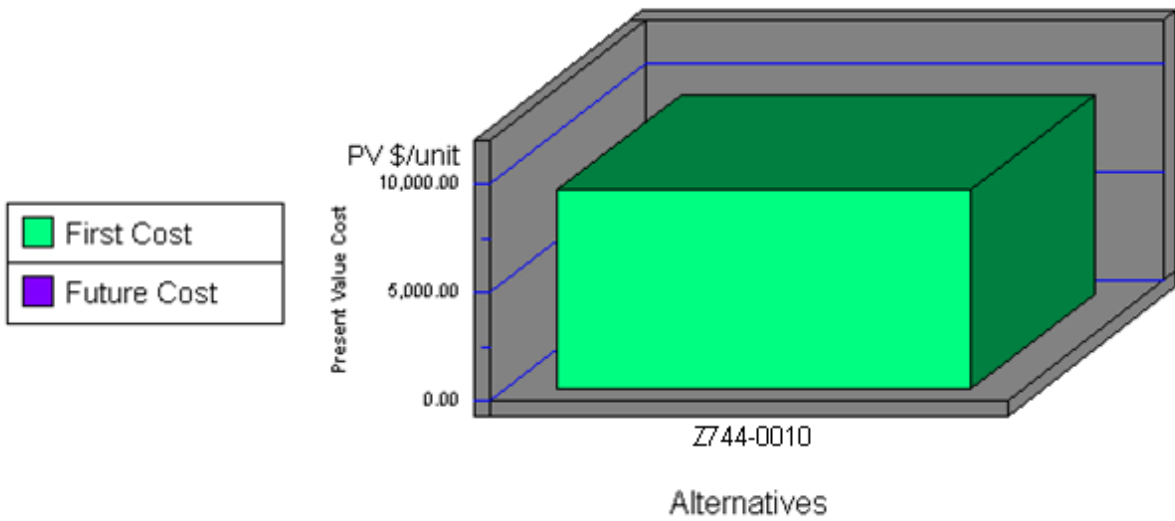


Note: Lower values are better

Category	Z744-0010
Acidification--3%	0.0001
Crit. Air Pollutants--9%	0.0143
Ecolog. Toxicity--7%	0.0600
Eutrophication--6%	0.0446
Fossil Fuel Depl.--10%	0.1898
Global Warming--29%	-0.3571
Habitat Alteration--6%	0.0000
Human Health--13%	0.3491
Indoor Air--3%	0.0000
Ozone Depletion--2%	0.0000
Smog--4%	0.1035
Water Intake--8%	0.0021
Sum	0.4064

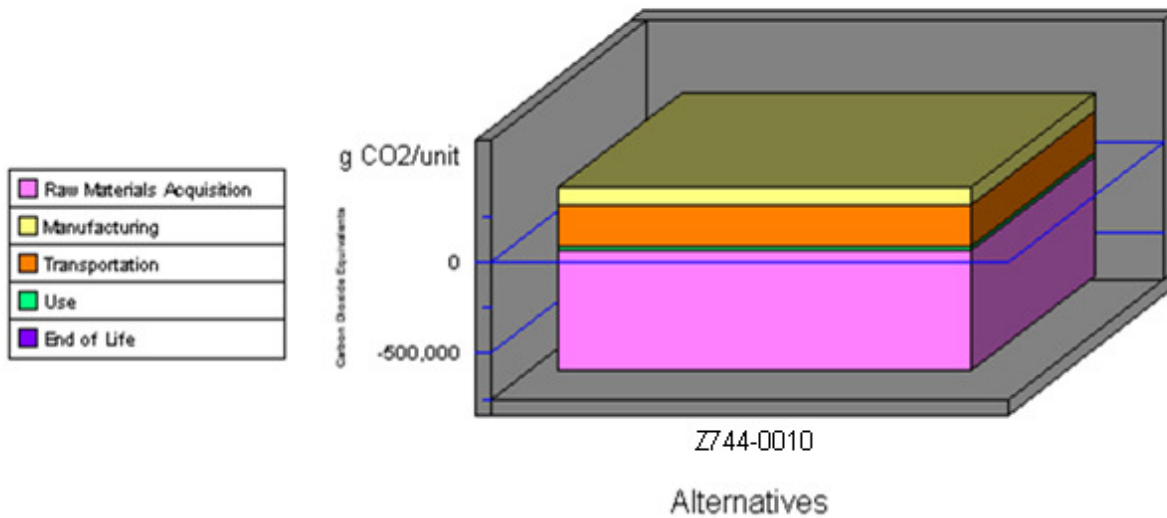
Mulch and Compost		
Impacts	Units	Z744-0010
Acidification	millimoles H ⁺ equivalents	1.70E+05
Criteria Air Pollutants	microDALYs	3.05E+01
Ecotoxicity	g 2,4-D equivalents	7.00E+02
Eutrophication	g N equivalents	1.43E+02
Fossil Fuel Depletion	MJ surplus energy	6.70E+02
Global Warming	g CO ₂ equivalents	-3.15E+05
Habitat Alteration	T&E count	0.00E+00
Human Health--Cancer	g C ₆ H ₆ equivalents	2.24E+02
Human Health--NonCancer	g C ₇ H ₈ equivalents	2.04E+05
Indoor Air Quality	g TVOCs	0.00E+00
Ozone Depletion	g CFC-11 equivalents	2.66E-05
Smog	g NO _x equivalents	3.92E+03
Water Intake	liters of water	1.37E+02
Functional Unit	-----	1 acre of coverage
<p>1 Following are more complete descriptions of units: Acidification: millimoles of hydrogen ion equivalents; Criteria Air Pollutants: micro Disability-Adjusted Life Years; Ecological Toxicity: grams of 2,4-dichlorophenoxy-acetic acid equivalents; Eutrophication: grams of nitrogen equivalents; Fossil Fuel Depletion: megajoules of surplus energy; Global Warming: grams of carbon dioxide equivalents; Habitat Alteration: threatened and endangered species count; Human Health-Cancer: grams of benzene equivalents; Human Health-NonCancer: grams of toluene equivalents; Indoor Air Quality: grams of Total Volatile Organic Compounds; Ozone Depletion: grams of chloroflourocarbon-11 equivalents; Smog: grams of nitrogen oxide equivalents; and Water Intake: liters of water.</p>		

Economic Performance



*This is a consumable product. Therefore, future costs are not calculated.

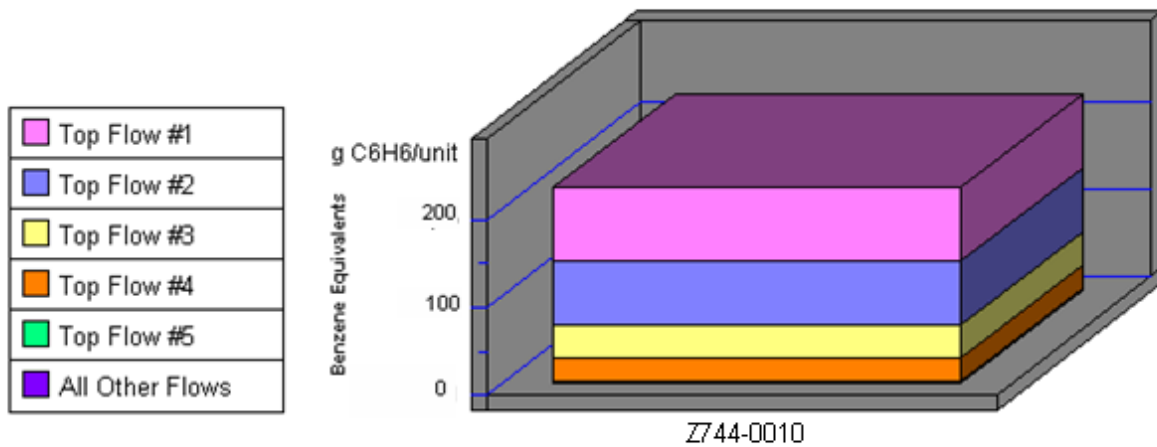
Global Warming by Life-Cycle Stage



Note: Lower values are better

Category	Z744-0010
1. Raw Materials	-658805
2. Manufacturing	95666
3. Transportation	230649
4. Use	17511
5. End of Life	0
Sum	-314979

Human Health Cancer by Sorted Flows*



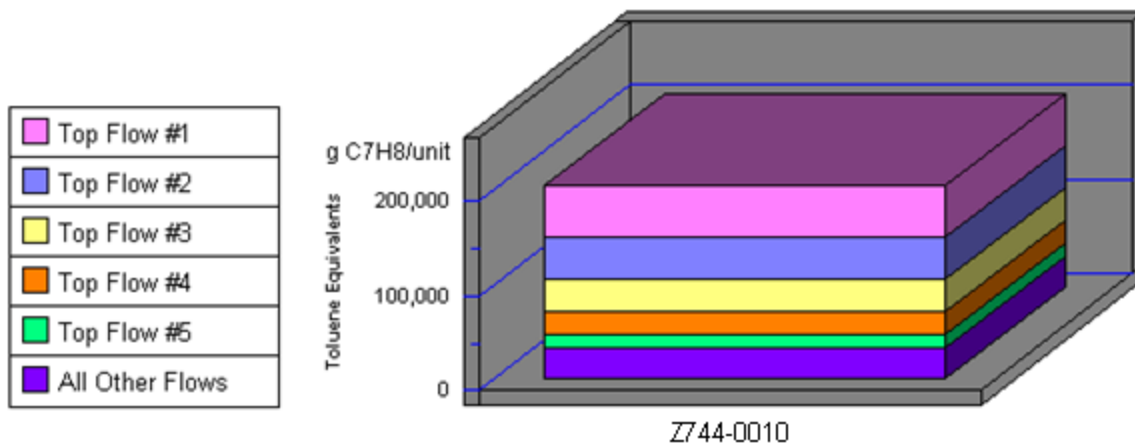
Alternatives

Note: Lower values are better

Category	Z744-0010
Cancer--(w) Arsenic (As3+, As5+)	84.66
Cancer--(w) Phenol (C6H5OH)	72.78
Cancer--(a) Dioxins (unspecifie	35.59
Cancer--(a) Arsenic (As)	27.13
Cancer--(a) Benzene (C6H6)	0.97
All Others	2.65
Sum	223.78

*Sorted by five topmost flows for worst-scoring product

Human Health Noncancer by Sorted Flows*



Note: Lower values are better

Category	Z744-0010
Noncancer--(w) Barium (Ba++)	54,096.78
Noncancer--(a) Dioxins (unspeci	44,836.00
Noncancer--(a) Mercury (Hg)	34,858.81
Noncancer--(w) Lead (Pb++, Pb4+	23,259.16
Noncancer--(a) Lead (Pb)	14,837.90
All Others	32,118.39
Sum	204,007.04

*Sorted by five topmost flows for worst-scoring product